

Remarks:

Reconsideration of the application is requested.

Claims 1-14 and 16-21 remain in the application. Claim 8 has been amended. Claims 1-7 and 21 have been withdrawn from consideration.

In the first paragraph on page 2 of the above-identified Office action, Figs. 6-12 of the drawings were objected to as not containing a legend such as --Prior Art--. Figs. 6-12 of the drawings were corrected as suggested by the Examiner. New "final" drawings of Figs. 6-12 are enclosed.

In the first paragraph on page 3 of the Office action, claims 8-20 have been rejected as being obvious over *Applicant's Admitted Prior Art* in view of *Canale et al.* (US Patent No. 6,040,213) or *Hoepfner* (US Patent No. 6,008,103) under 35 U.S.C. § 103.

In the paragraph bridging pages 6 and 7 of the Office action, the Examiner stated that:

The applicant argues that Canale et al discloses that the dopant is diffused into the N-layer enlarging the doped region (32). The examiner agrees that a diffusion step is present in the Canale et al reference, however the claim only requires that a doped region in the buried contact region by introducing a dopant into the substrate in a region underneath a surface of the substrate by at least one process selected from the group consisting of implantation, plasma doping, and

vapor phase deposition. ***The claim does not preclude an additional step of out-diffusing.*** The examiner maintains that both Canale et al. and Hoepfner disclose the step of forming a doped region in the buried contact region by introducing a dopant into the substrate in a region underneath a surface of the substrate by at least on process selected from the group consisting of implantation, plasma doping, and vapor phase deposition.

(Emphasis added)

The rejection and the Examiner's comments have been considered and claim 8 has been amended to recite that the forming of the doped region in the buried contact does not require out-diffusing, in an effort to even more clearly define the invention of the instant application. Support for the changes is found in the paragraph bridging pages 49 and 50 of the specification.

The underlying inventive concept of the invention of the instant application is to have a buried contact region where dopants have been introduced by at least one of an implantation doping, a plasma doping, and a vapor phase deposition. The introduction of dopants into a region by implantation doping, plasma doping, and vapor phase deposition instead of out-diffusion leads to a completely different structure and geometry of a doped region. The doped region can be realized with a much smaller size and its borders can be controlled accurately so that short channel effects and punch-through are avoidable. This has the advantage that the size of the trench cell and the junction depth can be reduced

(see discussion on page 49, third paragraph, of the instant application). *Applicant's Admitted Prior Art* in view of *Canale et al.* or *Hoepfner* neither suggest nor contain the relevant teaching suggesting such a buried contact region. Therefore, the invention as recited in claim 8 of the instant application is believed not to be obvious over *Applicant's Admitted Prior Art* in view of *Canale et al.* or *Hoepfner*.

Therefore, the invention as recited in claim 8 of the instant application is believed not to be anticipated by *Applicant's Admitted Prior Art* or to be obvious over *Applicant's Admitted Prior Art* in view of *Canale et al.* or *Hoepfner*. Claim 8 is, therefore, believed to be patentable over the art and since claims 9-14 and 16-20 are ultimately dependent on claim 1, they are believed to be patentable as well.

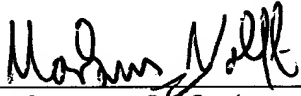
In view of the foregoing, reconsideration and allowance of claims 9-14 and 16-20 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, the Examiner is respectfully requested to telephone Counsel so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

If an extension of time is required, petition for extension is herewith made.

Please charge any fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



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FIG 6 PRIOR ART

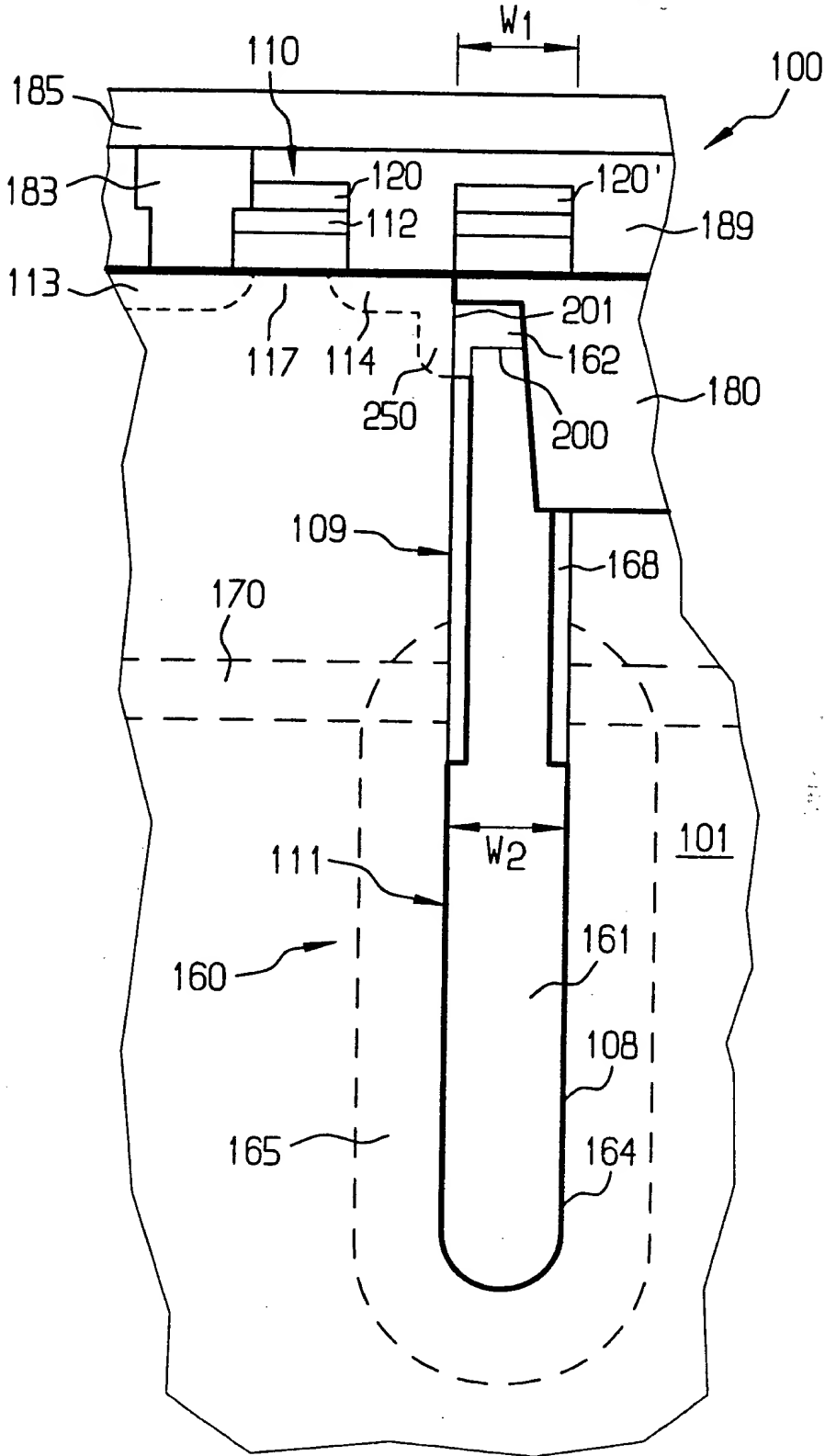




FIG 7 a PRIOR ART

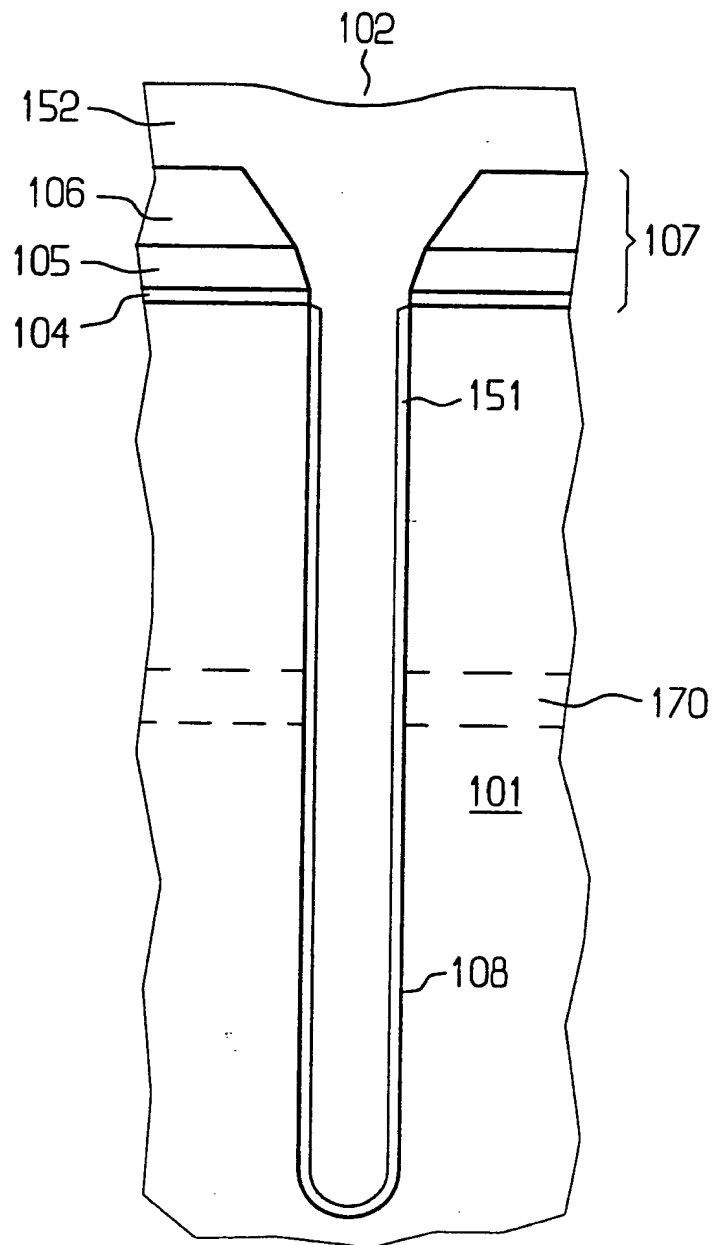




FIG 7 b PRIOR ART

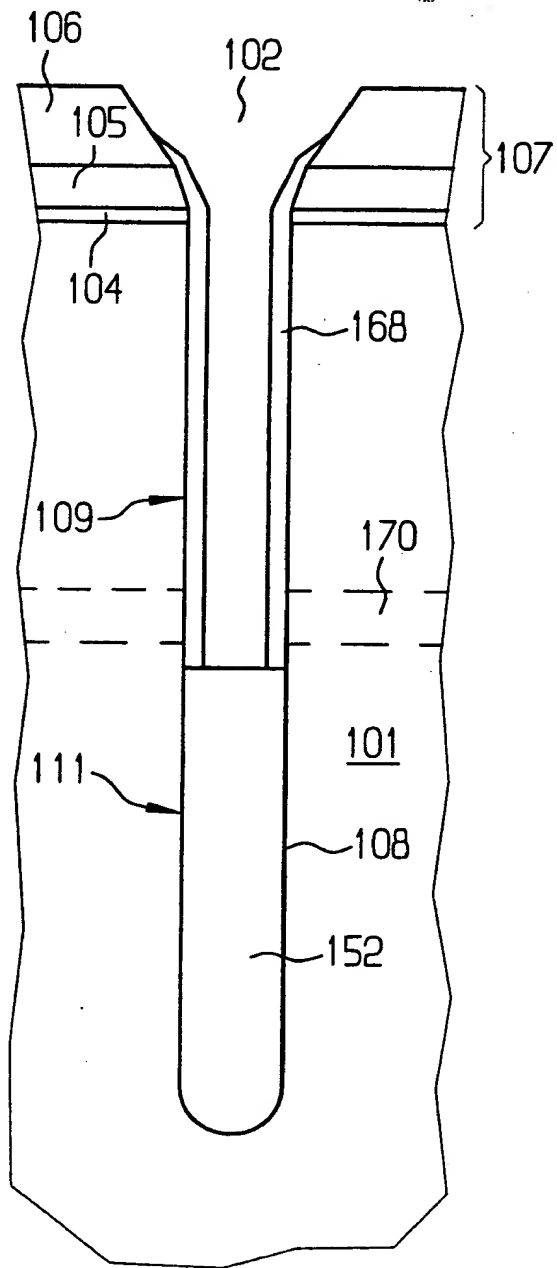


FIG 7 c PRIOR ART

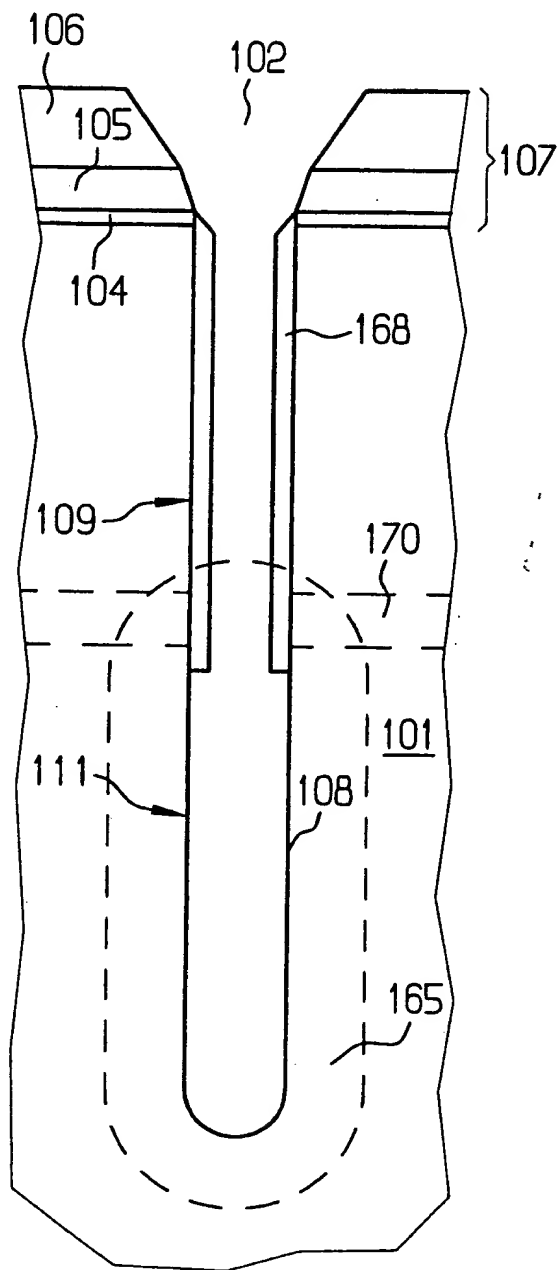




FIG 7d PRIOR ART

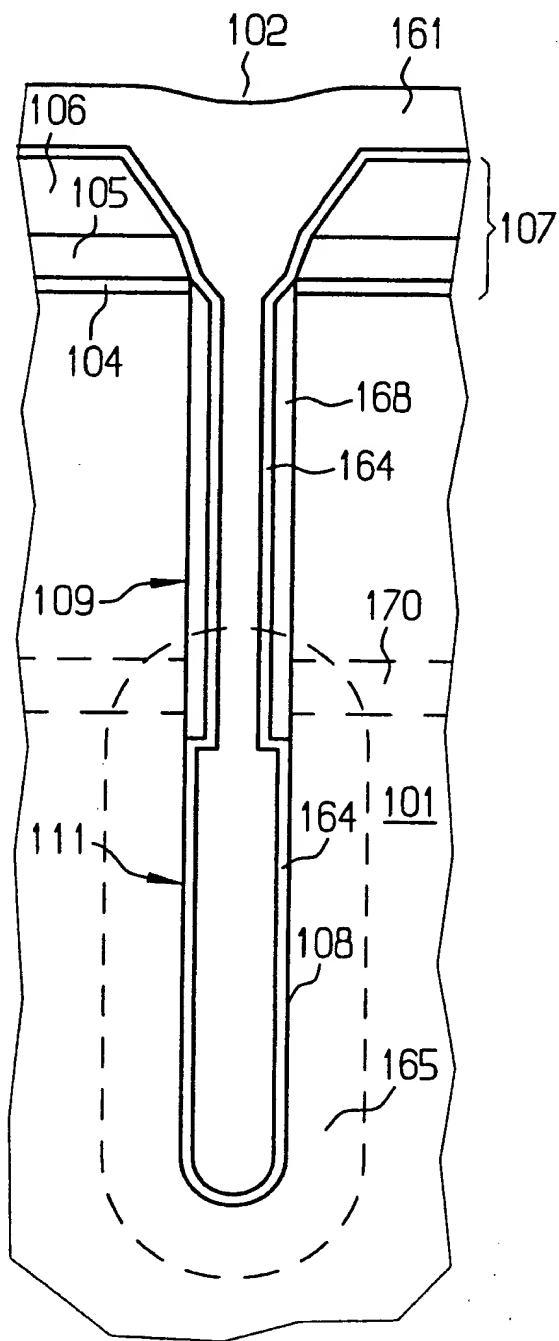


FIG 7e PRIOR ART

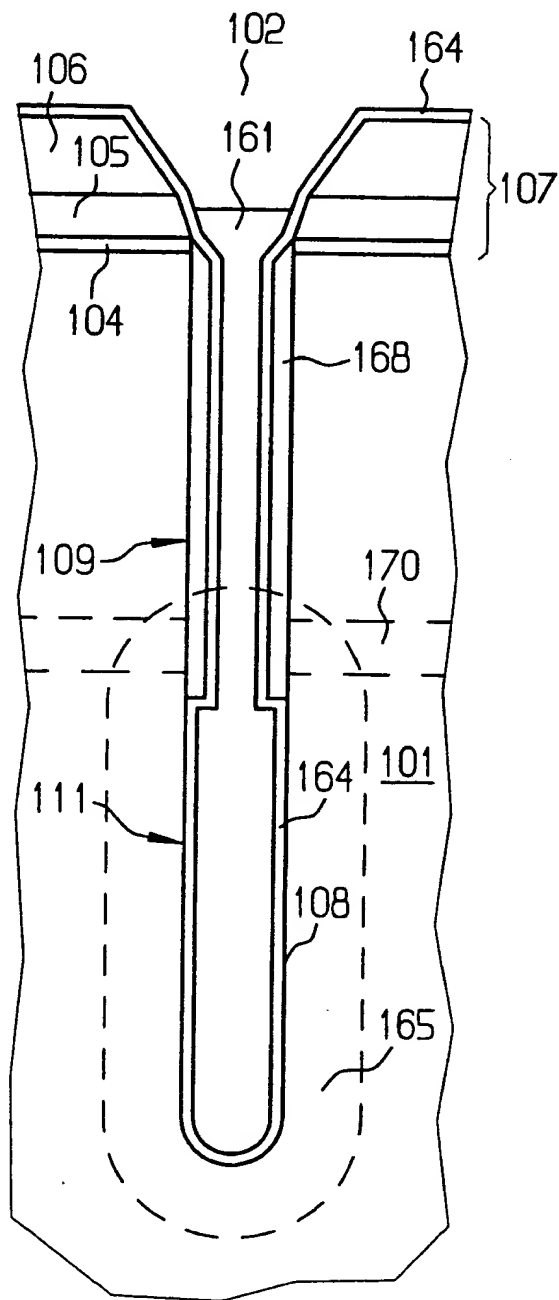






FIG 7f ~~PRIOR ART~~

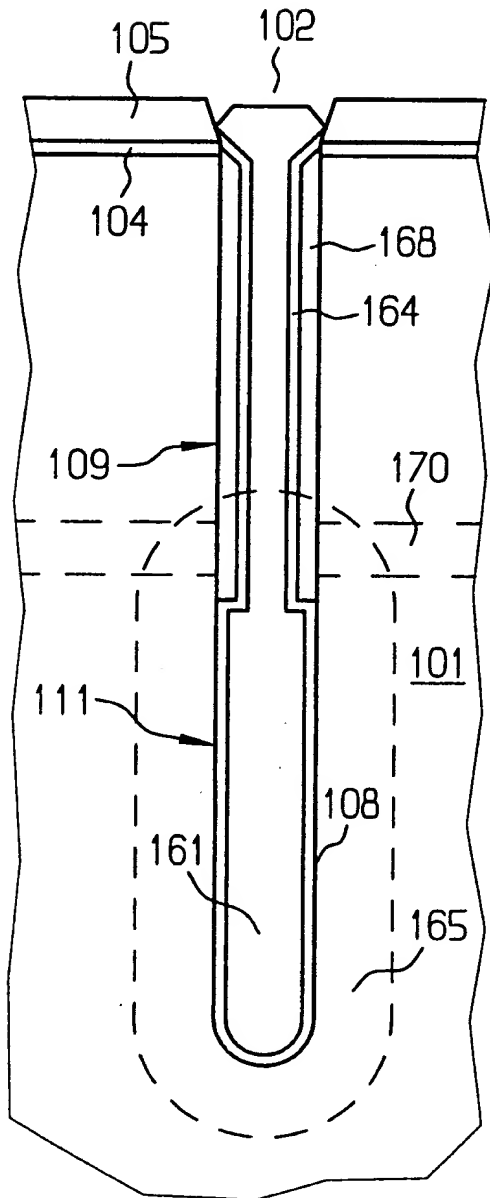


FIG 7g

~~PRIOR ART~~

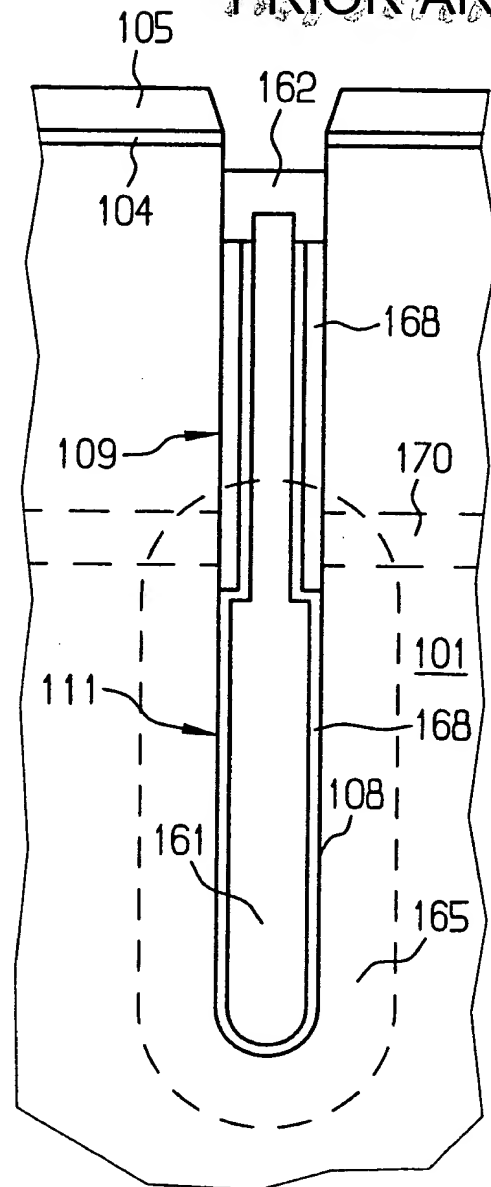




FIG 8 PRIOR ART

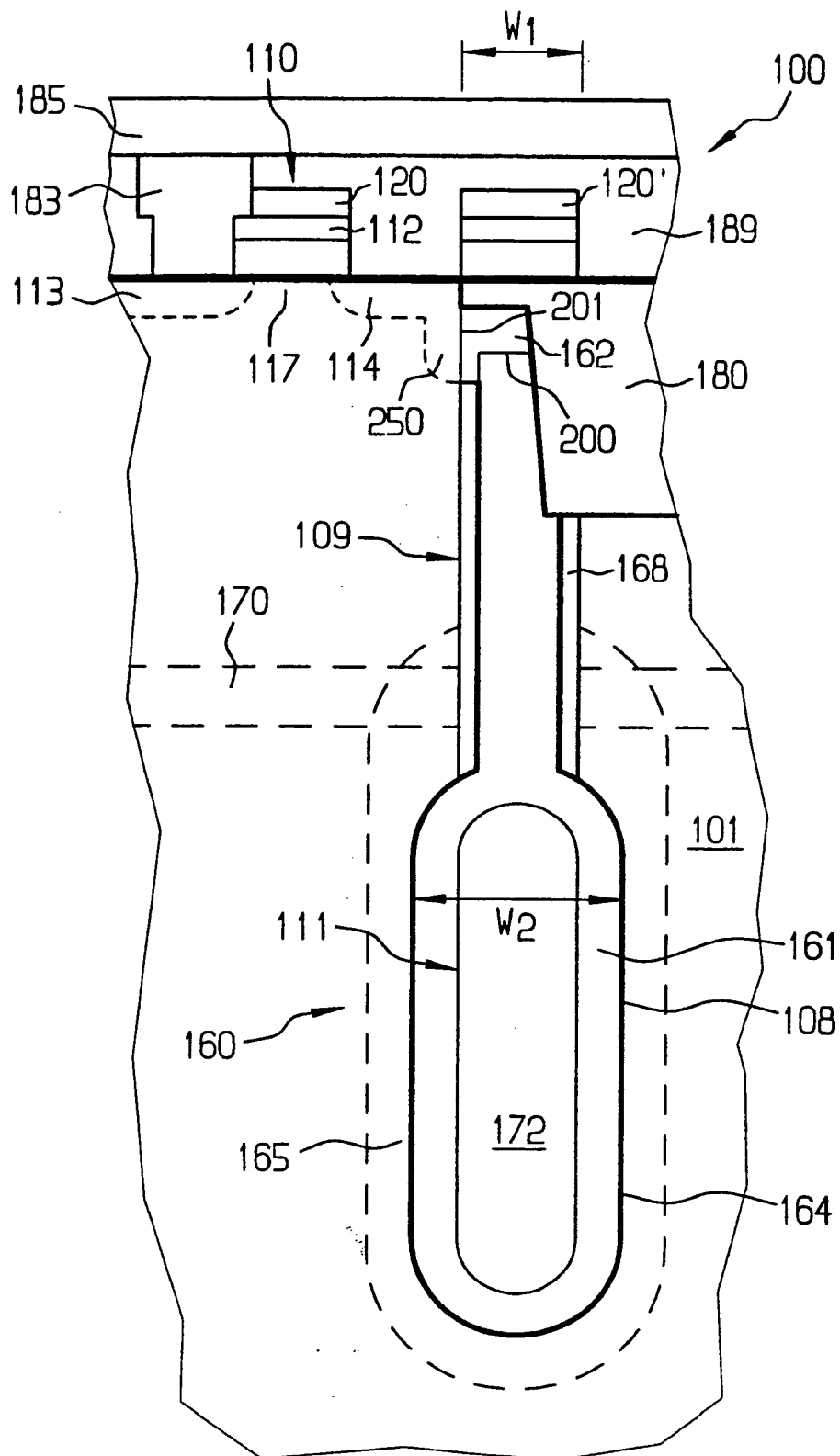




FIG 9 PRIOR ART

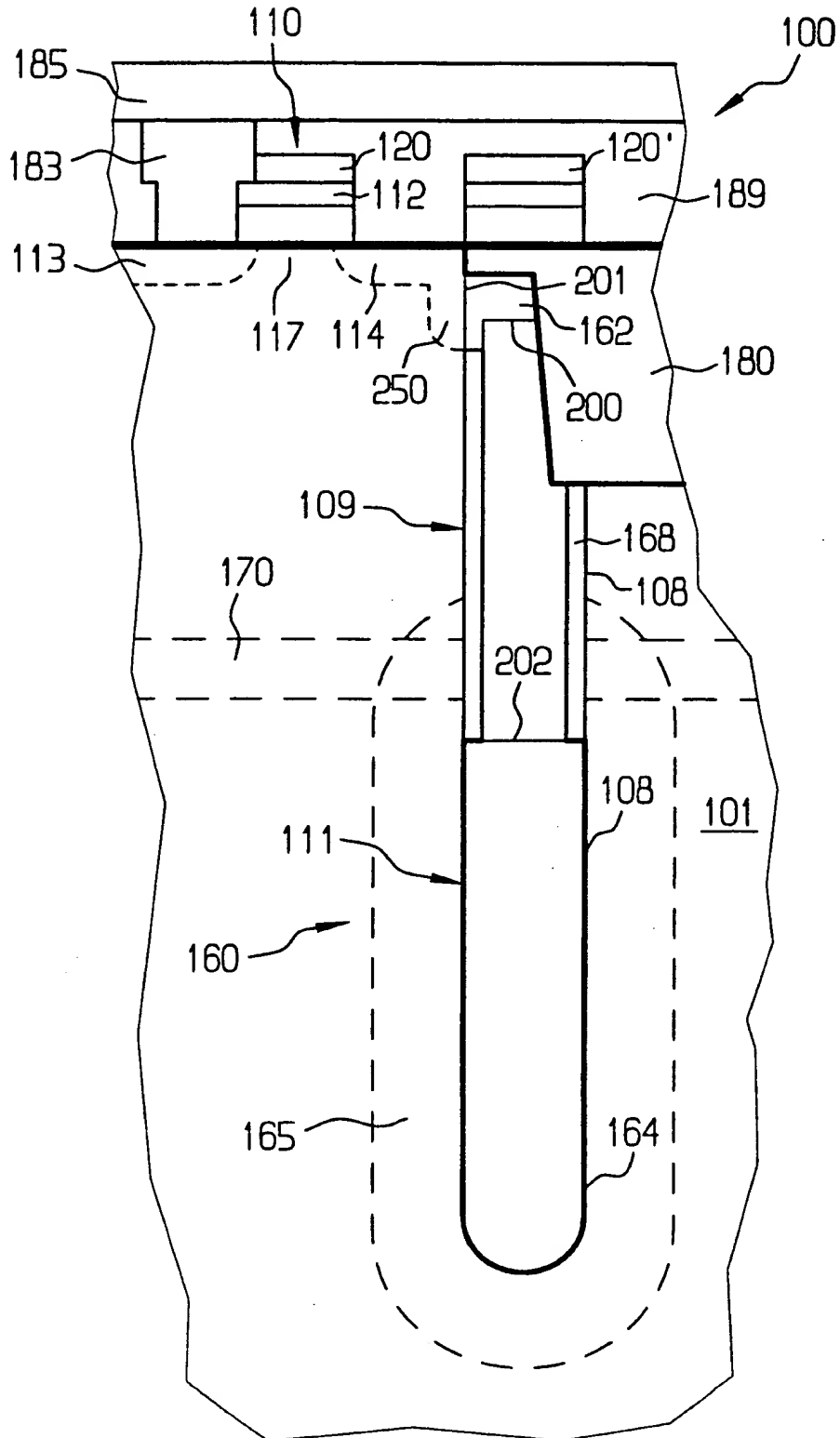




FIG 10 PRIOR ART

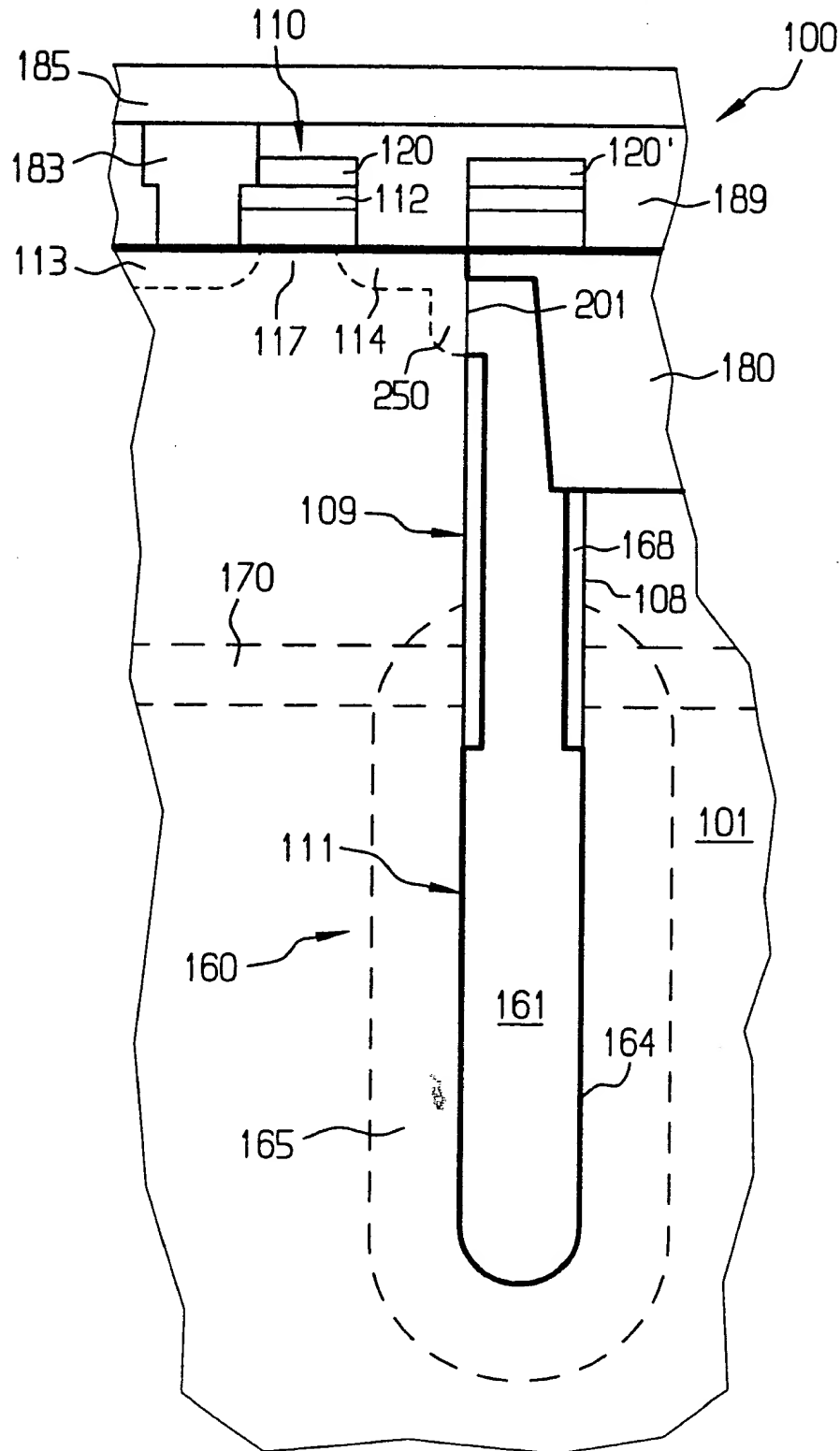


FIG 11a PRIOR ART

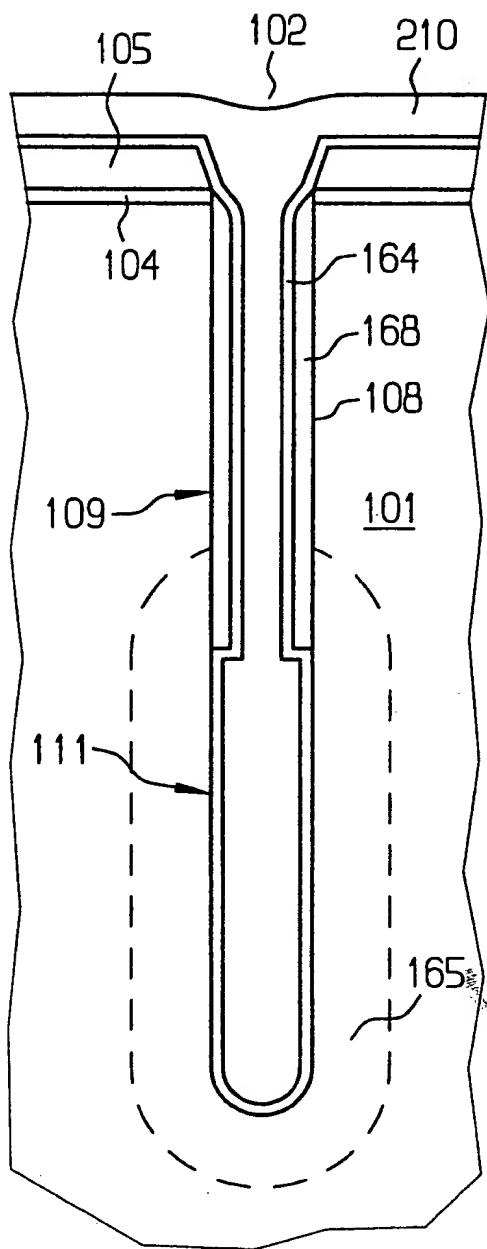


FIG 11b PRIOR ART

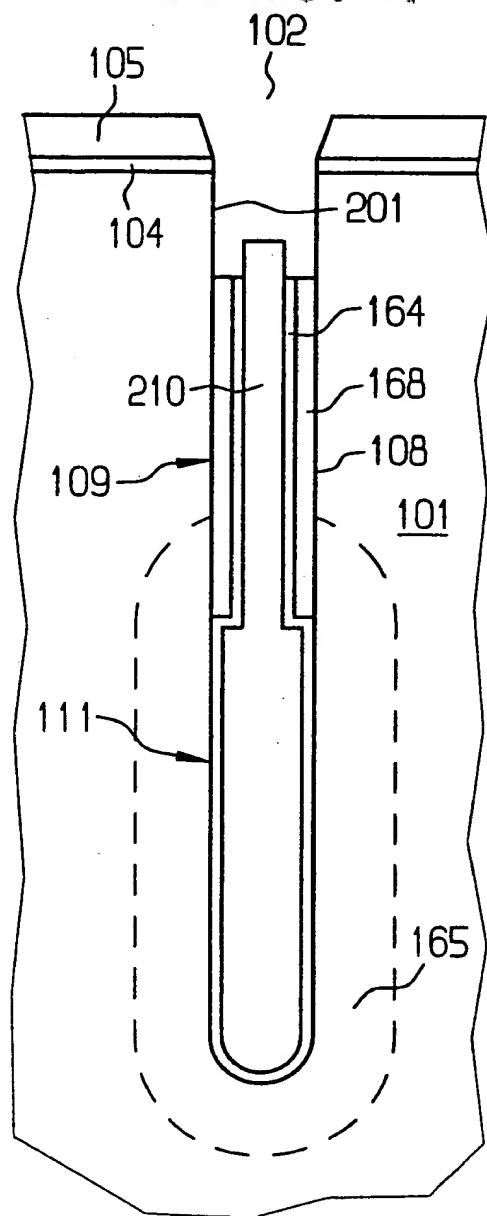




FIG 11c PRIOR ART

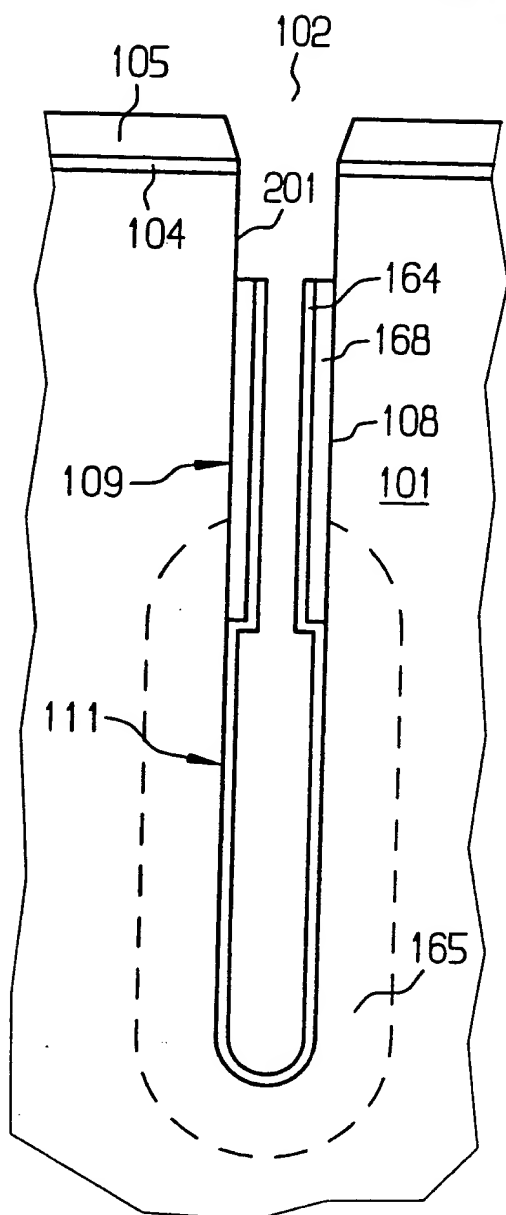


FIG 11d

PRIOR ART

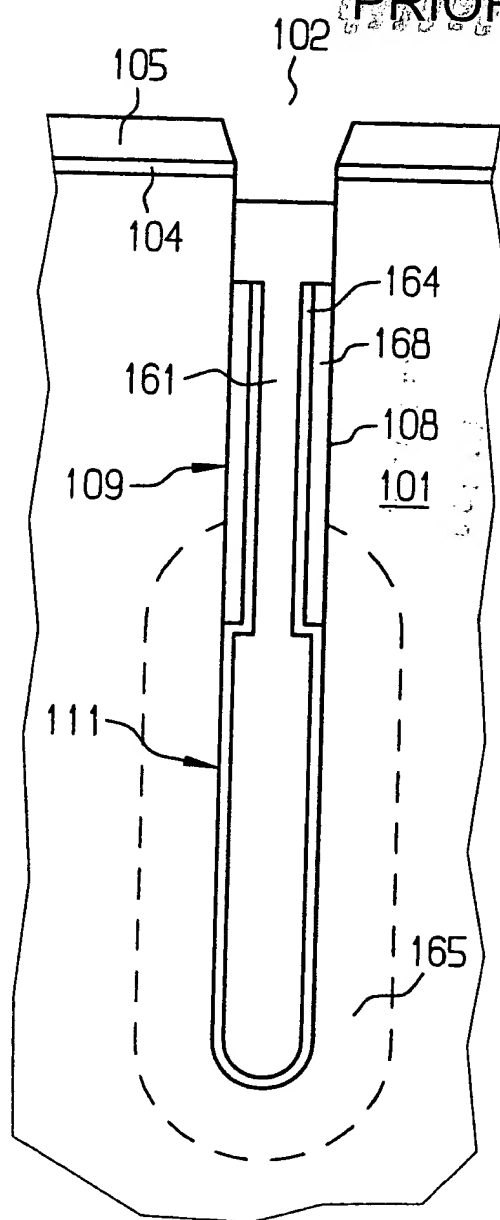




FIG 12 PRIOR ART

